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Executive Summary

The CONNECTINGHEALTH (Connecting the dots between digital health innovation ecosystems) project has the overall objective of fostering interconnected and inclusive innovation ecosystems across Europe and maximising the value of innovation in the digital health sector, with a long-term and sustainable vision. The intended audience of CONNECTINGHEALTH is the public-at-large and all stakeholders that influence and interact with digital health. To achieve the project's objective, CONNECTINGHEALTH has aimed at identifying and engaging a wide range of stakeholders from governments, industry, academia and society in the development of a multi-year action plan for a sustainable and thriving digital health sector in Europe. The first step in this mission was the mapping of key stakeholders of CONNECTINGHEALTH. For this mission, the project partners of CONNECTINGHEALTH joined forces and together with the help of digital health ecosystems across Europe, produced a comprehensive list of 170 key stakeholders, representing a wide range of stakeholders from the digital health field from 13 countries. Further, the objective of WP5 was to engage the other project stakeholders in WP2, WP3, WP4 and WP6 to ensure that the project's efforts were sustainable, inclusive, and had meaningful impact.

The aim of this particular deliverable was to provide a comprehensive description of the stakeholder mapping activities in the CONNECTINGHEALTH project. Recognising the crucial role of digital health stakeholders in driving innovation, the project aims to actively involve them in shaping desirable outcomes, aligning with its overarching objective of fostering interconnected and inclusive innovation ecosystems in Europe's digital health sector. As the initial step in this process, the deliverable highlights the mapping of key stakeholders. Overall, this deliverable provides valuable insights into the stakeholder mapping efforts within the CONNECTINGHEALTH project, highlighting the collaborative approach and the significance of stakeholders in achieving the overall project objectives. This deliverable also highlights the interrelation between other work packages and project's outputs, emphasizing the cross-cutting nature of the stakeholder activities in CONNECTINGHEALTH.

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List of Abbreviations

Abbreviation	Full terminology
D	Deliverable
ECHAlliance	European Connected Health Alliance
EU	European Union
M	Month
PBN	Pannon Business Network
SCOTENT	Scottish Enterprise
SeAMK	Seinäjoki University of Applied Sciences
T	Task
US	United States
UK	United Kingdom
WP	Work package

1. CONNECTINGHEALTH Project Overview

The COVID-19 pandemic changed healthcare and the world at large, demonstrating the potential for new solutions (e.g., the use of digital technologies and data) and the ability of health and care systems to adopt them quickly. While the crisis increased the uptake of digital solutions, it also highlighted disparities and disconnects in the implementation and design of available technologies across Europe and the need to further develop supporting innovation ecosystems.

In addition, European countries (EU, UK and others) face stiff global competition to develop and adopt new healthcare technologies, developed mostly in the US and China to the detriment of the European market and citizens. Therefore, there is a need for collaboration, innovation and investment that capitalises on the strengths of the European continent.

In the above context, the CONNECTINGHEALTH project has the overall objective of fostering interconnected and inclusive innovation ecosystems across Europe and maximising the value of innovation in the digital health sector, with a long-term and sustainable vision.

CONNECTINGHEALTH Objectives

- 1. Objective 1:** To map the landscape of the digital health ecosystems in Europe and beyond including their stakeholders, resources, initiatives, projects and political frameworks.
- 2. Objective 2:** To explore the current and future opportunities for growth of the digital health sector, and its competitiveness.
- 3. Objective 3:** To engage a wide range of stakeholders from governments, industry, academia and society in the development of the multi-year action plan for the sustainable and thriving digital health sector in Europe.
- 4. Objective 4:** To connect and interconnect the existing regional and thematic digital health ecosystems for better cooperation, learning, exchange of best practices and wider impact.

2. Background

Digital health, a key concept of this project, can be defined in many ways. Based on literature review and discussions within the CONNECTINGHEALTH project, the consortium has agreed on a definition, in which digital health is “the application of information technology in a healthcare setting, and includes the concepts of both mHealth and eHealth.”¹ As such, digital health aims to improve individuals’ health and wellbeing by: (1) empowering citizens in the management of their own health as well as the promotion of their wellbeing and the prevention of diseases, and (2) fostering the shared decision-making processes between citizens and healthcare providers.”²

Digital health ecosystems on the other hand are defined as multi-stakeholder partnerships, focused on a region or a theme, that are committed to working together to implement innovative digital health solutions that break down silos, transform healthcare and create economic opportunities by connecting needs with solutions³. Stakeholders of digital health within this deliverable are categorised as social and health care stakeholders, companies, policy makers, education & research, and funders or third sector organisations, based on the Multistakeholder Ecosystems Model segments (Figure 1).

This model was developed with the help of the European Commission to ensure that all stakeholders within health care were involved in Digital Health Ecosystems from patients to companies or funders and researchers. It was developed first in Manchester and Belfast in the UK and grew with more ecosystems - quickly developing into the model now in use with Patients and Citizens at the centre of the ecosystem, leading with the need in permanent multistakeholder gatherings targeting regional health priorities.

This model can essentially target silos within healthcare; actually developing transformative digital health while also embracing economic opportunity. All ecosystems within the ECHAlliance ecosystem are different, but all have this basic methodology at their heart as well as the desire to learn and scale from a wide international network.

¹ Chan J. (2021). Exploring digital health care: eHealth, mHealth, and librarian opportunities. *Journal of the Medical Library Association : JMLA*, 109(3), 376–381. <https://doi.org/10.5195/jmla.2021.1180>

² CONNECTINGHEALTH (2022). Deliverable 2.1. Map of the digital health ecosystems in Europe and beyond. CONNECTing the dots withIN diGital HEALTH Innovation Ecosystems

³ European Connected Health Alliance. (n.d.). Ecosystems. Retrieved from <https://echalliance.com/ecosystems/>

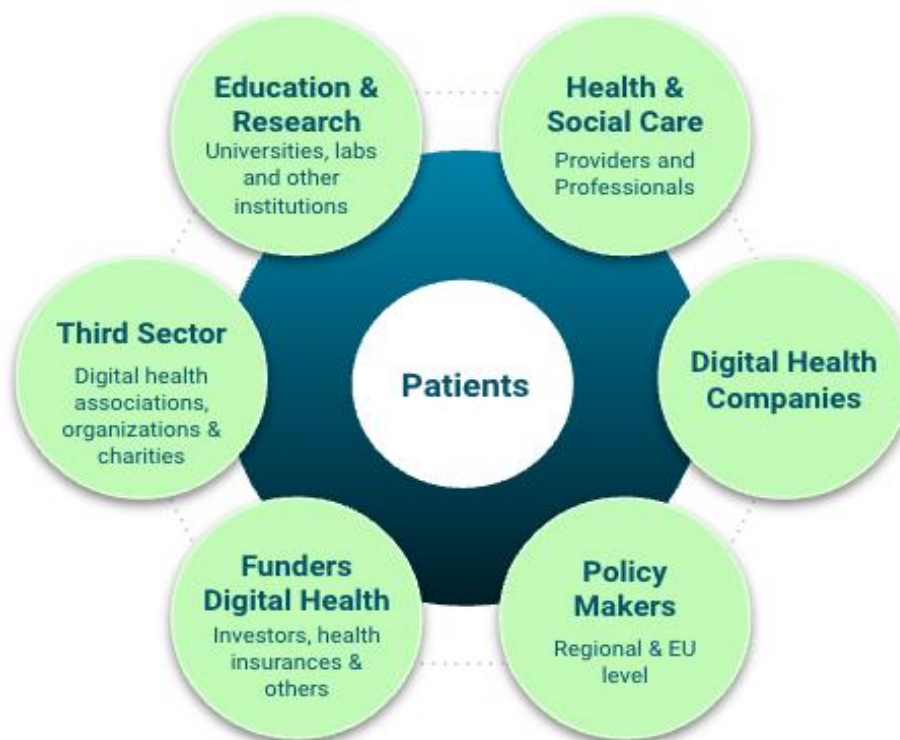


Figure 1. The multistakeholder ecosystems -model (ECHAlliance n.d.)

2.1 Deliverable objective and scope

The success of any project is dependent on active participation and collaboration with the projects' relevant stakeholders. This has been the case especially so in the Horizon EU-funded CONNECTINGHEALTH project. The project, which aims to cultivate interconnected and inclusive innovation ecosystems across Europe and maximize the value of innovation in the digital health sector, has recognized the vital role of key stakeholders in achieving these objectives. By participating in co-creation workshops held within the framework of WP2 and taking part in surveys and interviews within WP3, stakeholders helped pave the way towards a successful completion of the project. The active involvement of multidisciplinary and cross-sectoral stakeholders has been a crucial affirmation, ensuring that the project's efforts have been sustainable, inclusive, and have had a meaningful impact. This particular deliverable is a part of the WP5 (M1-M24), which objectives are:

- To undertake a thorough mapping of the digital health stakeholder groups in Europe and beyond, relevant for the current and future action

- To evaluate the needs and expectations of the stakeholders in relation to developments of the digital health ecosystems in the future
- To mobilise the stakeholders and ecosystems for the activities in the project and preparation of the future action
- To engage the stakeholders into dialogue and collaboration within the innovative ecosystem

2.2 Relation to other WPs and deliverables

The present deliverable is linked with:

Table 1. Relation to other WPs and deliverables

WP	Deliverable	Relationship
WP5	D5.2 Report on the engagement of stakeholders and ecosystems	Direct contribution
WP2	D2.2 Scenarios for the digital health in 2030	Complementary
WP3	D3.1 Report on the three focus areas	Complementary
WP6	D6.1 Comprehensive multi-year action plan	Complementary

2.3 Content of the deliverable

This deliverable provides information on the consortium’s activities linked to the mapping of key stakeholders in the CONNECTINGHEALTH project by:

- Describing the methods related to stakeholder identification and categorisation.
- Describing the outcomes of the stakeholder identification (map of key stakeholders).

3. Methods

Stakeholder mapping activities of the CONNECTINGHEALTH project began immediately after the project kickoff in M1 (06/2022). In Task 5.1 (identification of key stakeholders, M1-M3), each project partner was assigned the task of identifying a comprehensive list of their organisations' key stakeholders related to digital health. The stakeholders were categorised based on their agenda, location, activities, sectors and categories. Contact information was also provided in order to invite these stakeholders to future activities of the project.

The project partners were instructed to first come up with a list of stakeholders that they currently were familiar with or engaged with on a regular occurrence. This approach was seen as a good start to the stakeholder mapping process, because these kinds of "friend organisations" are active, familiar, involved with the partners' work, and share common interests on digital health. However, the mapping of key stakeholders was not limited only to current stakeholder networks of the project partners. Instead, the partners were encouraged to take the opportunity to approach new organisations, make new connections, and share the messages of CONNECTINGHEALTH beyond their pre-existing networks.

Parallel to this task, key stakeholders were identified through the ecosystem mapping survey completed in T2.1 (mapping of the digital health ecosystems landscape M1-M6), in which digital health ecosystems were asked for a list of their key stakeholders. For this deliverable, applicable parts of the survey input from the European digital health ecosystems was extracted and analysed.

The categories used in the identification of stakeholders were the following six segments from the Multistakeholder Ecosystems Model:

- Social and healthcare
- Companies
- Policy makers
- Education & research
- Funders
- Third sector

4. Stakeholder mapping analysis

As the outcome of the partners' stakeholder mapping process, the CONNECTINGHEALTH team identified a list of 70 key stakeholders for the project. Most of the key stakeholders were education & research organisations (n=17), companies (n=15) or classified as 'other' (n=15). Other stakeholders, represented to a lesser extent, were policy makers (n=8), social and healthcare organisations (n=8), third sector (n=5) and funders (n=2).

Stakeholders of the ecosystems identified in T2.1 provided the project team with a total of 116 additional key stakeholders. These included companies (n=38), education & research organisations (n=25), social and healthcare organisations (n=25), others (n=15), third sector (n=9) and policy makers (n=4). Interestingly, no funders were identified as key stakeholders by the European digital health ecosystems.

In total, 186 key stakeholders were identified by the project partners and ecosystems. The stakeholder categories comprising the largest portion of stakeholders were companies (n=53), followed by education and research organisations (n=42). These were followed by social and healthcare organisations (n=33), other organisations (n=30), third sector (n=14), policy makers (n=12), and funders appeared as the least represented organisations (n=2) (Table 2).

Table 2. Stakeholder categories

Stakeholder category	Number of organisations		
	Partners' stakeholders	Ecosystems' stakeholders	Total
Companies	15 (21,4%)	38 (32,7%)	53 (28,4%)
Education & Research	17 (24,2%)	25 (21,5%)	42 (22,5%)
Social and Health Care	8 (11,4%)	25 (21,5%)	33 (17,7%)
Other	15 (21,4%)	15 (12,9%)	30 (16,1%)
Third sector	5 (7,1%)	9 (7,5%)	14 (7,5%)
Policy makers	8 (11,4%)	4 (3,4%)	12 (6,4%)
Funders	2 (2,8%)	-	2 (1,0%)
Total	70	116	186

Geographically, the stakeholder organisations were spread around Europe. In total, 13 countries were represented.

The country with the greatest number of stakeholders was Finland with 69 (37,0%) identified key stakeholders, followed by Denmark's 42 (22,5%), UK's 26 stakeholders (13,9%).

Other countries represented were Ireland (n=14, 7,5%), Hungary (n=12, 6,4%), Spain (n=9, 4,8%), Slovenia (n=6, 3,2%), Romania (n=2, 1,0%), Portugal (n=2, 1,0%), Poland (n=1, 0,5%), Latvia (n=1, 0,5%), Italy (n=1, 0,5%) and Austria (n=1, 0,5%) (Table 3.).

Table 3. Locations of the key stakeholders

Country	Number of organisations		
	Partners' stakeholders	Ecosystems' stakeholders	Total
Finland	20	49	69 (37,0%)
Denmark	2	40	42 (22,5%)
UK	24	2	26 (13,9%)
Ireland	2	12	14 (7,5%)
Hungary	9	3	12 (6,4%)
Spain	4	5	9 (4,8%)
Slovenia	1	5	6 (3,2%)
Romania	2	-	2 (1,0%)
Portugal	2	-	2 (1,0%)
Poland	1	-	1 (0,5%)
Latvia	1	-	1 (0,5%)
Italy	1	-	1 (0,5%)
Austria	1	-	1 (0,5%)
Total	70	116	186

5. Conclusions

The aim of this deliverable was to describe the methods and outcomes of CONNECTINGHEALTH's stakeholder identification and categorisation. The findings highlighted the broad range of stakeholders involved in the CONNECTINGHEALTH project, with a strong emphasis on companies and educational institutions. The geographical diversity of the stakeholders reflects the wide-ranging collaborative efforts in the CONNECTINGHEALTH project across many European countries. The absence of funders as identified key stakeholders was an interesting observation, when considering how important these stakeholders can be in supporting and driving innovation in digital health.

Overall, the distribution of stakeholders across different locations and stakeholder categories provided not only valuable insights into the composition of the digital health landscape, but also likely reflected how active different stakeholders from various countries are with regards to engaging with ecosystems and different digital health organisations.

It is noteworthy that the identified stakeholders had, location-wise, a focus in the countries of the project partners, with stakeholders from Finland (SeAMK), UK (SCOTENT), Ireland (ECHAlliance) and Hungary (PBN) accounting for 64.8% of all identified stakeholders. A summary of the key stakeholders identified can be found in the figure below (Figure 2).

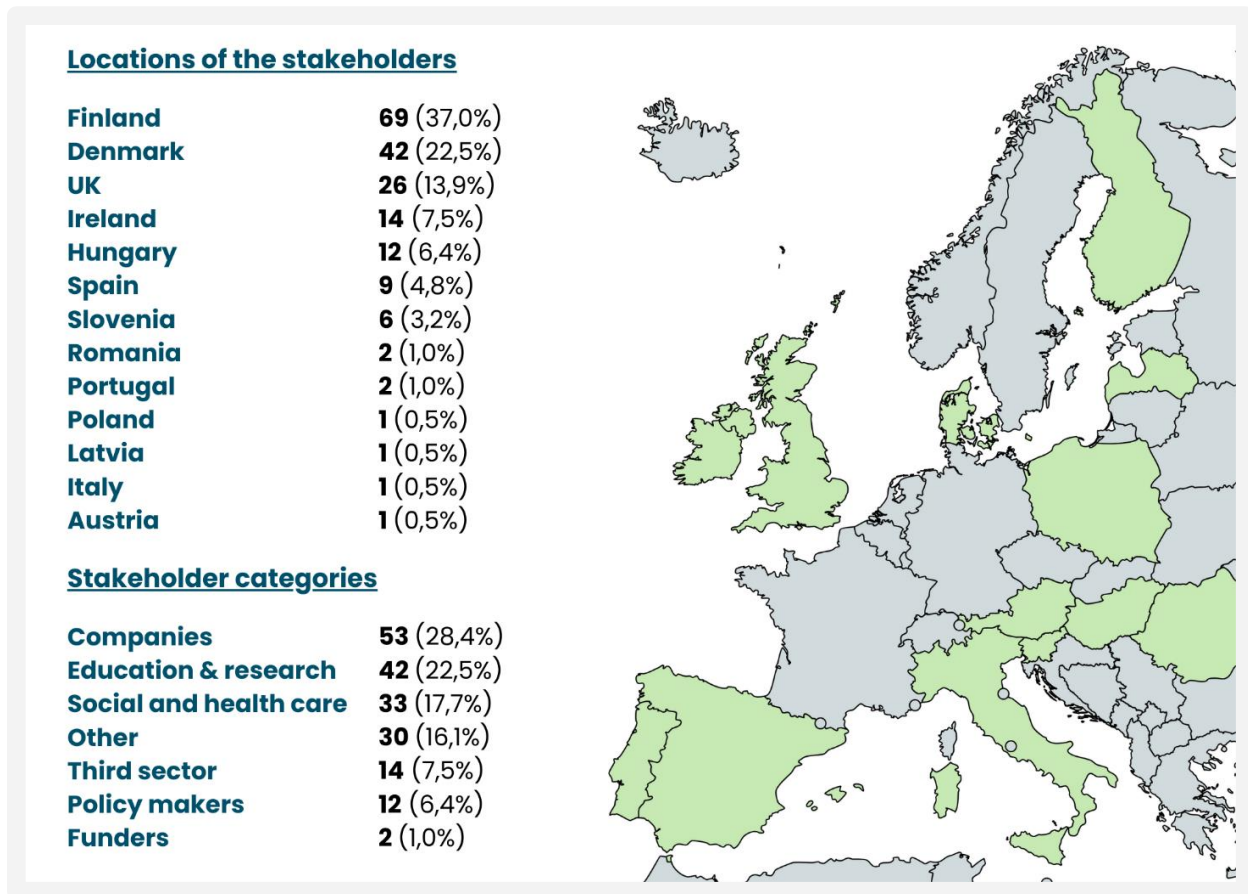


Figure 2. Summary of the key stakeholders

5.1 Current involvement of stakeholders

The identified key stakeholders are and have been actively involved in many crucial parts of the project. For example, in WP2, the consortium facilitated a total of 10 exploratory workshops in which multidisciplinary and multisectoral stakeholders from the field of digital health were invited to plan and vision future scenarios of digital health in 2030. The topics of the workshops included digital therapeutics & digital pharma, telehealth & remote patient monitoring, digital health softwares & platform solutions, reimbursements & financial mechanisms, digital health skills & workforce, virtual clinical trials, digital health data, personalized nutrition and a final workshop for the future of digital health (Figure 3.)

Topic	Date	Details
Digital Therapeutics & Digital Pharma	11th Oct 2022	In-person - Szombathely - Hungary Szombathely2030 Conference
Telehealth & Remote Patient Monitoring	11th Oct 2022	In-person - Szombathely - Hungary Szombathely2030 Conference
Digital Health Softwares & Platform Solutions	26th Oct 2022	In-person - Galicia - Spain RIES forum
Reimbursements & Financial Mechanisms	30th Nov 2022	Virtual
Digital Health Skills & Workforce	14th Dec 2022	In-person - Athens
Digital Health Skills & Workforce	13th Jan 2023	Virtual
Virtual Clinical Trials	18th Jan 2023	Virtual
Digital Health Data	19th Jan 2023	Virtual
Personalised Nutrition	9th Feb 2023	Virtual
The future of Digital Health	March 2023	In-person - Barcelona - Spain DHWS 2023

Figure 3. WP2. Workshops⁴

In addition to WP2 activities, the stakeholders have also been invited to take part in WP3 related activities, such as surveys and interviews. In this WP3 undertaking, critical insight and lessons learnt has been gained from the focus areas to be used for providing information for the European ecosystems and stakeholders on the following three focus areas:

- **T3.1:** Health for wealth (SCOTENT)
- **T3.2:** From traditional to digital health industry (PBN)
- **T3.3:** Supporting health and social care stakeholders in promoting and adopting digitalization and new technologies in health and social care services (SeAMK)

5.2 Next Steps

The workshop activities of WP2 together with the three focus areas of WP3 all contribute to the final task of the project, which is the development of the multi-year action plan for the sustainable and thriving digital health sector in Europe. This multi-year action plan will prioritise multi-

⁴ European Connected Health Alliance (2022). CONNECTINGHEALTH Futures Workshops. Retrieved 20.6.2023 from <https://echalliance.com/wp-content/uploads/2022/12/workshops-connectinghealth-202212.pdf>

stakeholder collaboration, capitalising on potential, likely, and desired future scenarios. It will also ensure inclusivity by incorporating diverse perspectives, strongly aligning with the objectives of the Next Generation EU⁵ and Sustainable Development Goals.⁶

To ensure a comprehensive approach, the plan will be jointly formulated and validated with the broad range of stakeholders involved. As such, stakeholder actions can be seen as a cross-cutting activity throughout the entire project, both enhancing the quality of the actions taken within the project, but also for facilitating the dissemination of the project outcomes to the stakeholders (Figure 4.).



Figure 4. Pert Chart of CONNECTINGHEALTH

5.3 Lessons Learned

Digital health stakeholders are extremely important as they play a critical role in supporting and driving innovation in this area. Their active involvement is essential for the continued development of digital health and the improvement of healthcare outcomes worldwide. However, there are certain factors that can cause challenges in the essential task of stakeholder identification. For example, in the digital health field, there appears to be stakeholder organisations that may be difficult to categorise by the frameworks established within the Multi-Stakeholder Ecosystems model, reflecting the broad nature of the digital health field.

A challenge may also appear when approaching the concept of stakeholder mapping. In the tasks, some ecosystems and partners found it difficult to define who their stakeholders are and how

⁵ European Commission. (n.d.). Next Generation EU. Retrieved 20.6.2023 from https://next-generation-eu.europa.eu/index_en

⁶ European Commission. (n.d.). Sustainable Development Goals. Retrieved 20.6.2023, from https://commission.europa.eu/strategy-and-policy/international-strategies/sustainable-development-goals_en

much interaction or what kind of consent is needed between two parties to define one as the other's stakeholder. This was also paired with the realisation that some organisations may not be comfortable to approach certain stakeholder groups with messages of CONNECTINGHEALTH. Additionally, some European ecosystems had so many stakeholders in their radar, that they were unable to name each of them for a survey.

Furthermore, it was noticed that different stakeholders, due to their busy schedules and organisational priorities, often prioritise their internal matters over EU project stakeholder activities. Especially those organizations that were not already familiar or involved with the project partners' work. This matter has been recognized and will continue to be the focus of stakeholder engagement (T5.2, M1-M24) in the project. Overall, the lessons learned from this deliverable emphasise the importance of identifying and engaging diverse stakeholders, involving them in planning and decision-making processes to reach the goals of any projects and in the case of CONNECTINGHEALTH specifically, to connect the dots within digital health innovation ecosystems.